Region 2 Enforcement & Compliance Assurance Division
Air Compliance Branch

CAA Inspection Report

Inspection Date:	9/14/2022
Facility Name:	Cruzan Virgin Islands Rum Industries (VIRIL) Ltd – Cruzan Rum Distillery
Facility Address:	#3 & 3A Estate Diamond, Frederiksted, Virgin Islands 00841
ICIS-Air ID #:	VI0000007800100004
Facility Contact:	Corin Kaough, EHS Manager, 340-244-3928, corin.kaough@cruzanrum.com
EPA Lead Inspector:	Victor Tu, Environmental Engineer, ECAD/ACB, 212-637-3476
EPA Asst. Inspector:	Ralph Lonergan, Environmental Scientist, ECAD/ACB, 212-637-3516
State Inspector(s):	Andrew Jackson, Environmental Engineer, DNER/APC, 340-514-2134
Other Inspector(s):	Other inspector name, title, phone number.
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Background

Cruzan Viril, Ltd. (Cruzan) operates a rum distillery called Estate Diamond Frederiksted in St. Croix, US Virgin Islands (USVI). Cruzan changed from a synthetic minor to major source for volatile organic compounds (VOCs) and submitted a Title V permit application to VIDPNR on May 9, 2019. The permit change was due to the incorporation of the Vinasse Process at the facility. This new process increased the facility's potential emissions of VOCs above the major source threshold of one hundred tons per year.

Pertinent Regulatory Requirements

Cruzan has applicable regulatory requirements under the following Federal regulations:

40 CFR, Part 70 – Federal Operating Permit Programs
40 CFR, Part 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units: Boiler 1, 2, 3, and 4
40 CFR, Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines: CAT3412 Generator, C175-16, C32, and both Fire Water Pump Engines
40 CFR, Part 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines: CAT CG175K
40 CFR, Part 63, Subpart JJJJJJ – National Emissions Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers at Area Sources: Boiler 1, 2, 3, and 4

40 CFR, Part 63, Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines at Area sources: CAT3412 generator, and both Fire Water Pump Engines

Opening Conference

EPA Inspectors contacted Cruzan on Tuesday, September 13, 2022, and spoke with the Environmental, Health and Safety (EHS) Supervisor, Ashley Maldonado, and informed her that EPA planned to conduct a Clean Air Act (CAA) inspection on the following day.

On September 14, 2022, EPA Inspectors Victor Tu and Ralph Lonergan arrived at the Cruzan office at approximately 9:00 AM. DPNR Inspector, Andrew Jackson, joined the EPA inspectors on this inspection. We were met by Ashley Maldonado, Marra Austrie, EHS coordinator, and Corin Kaough, EHS Manager, at the plant entrance. EPA inspectors presented their credentials to the Cruzan representatives. Mr. Kaough escorted the inspectors to the plant manager's office where we meet with Louis Houle briefly. EPA inspectors explained the reason for the inspection. After introductions, Mr. Kaough escorted the inspectors to an open conference room where we started the in-brief.

During the in-brief, Mr. Kaough provided the EPA inspectors with a copy of the schematic of the manufacturing processes at Cruzan. The schematic was marked as CBI. EPA inspectors told Mr. Kaough that this document will be handled as CBI.

Mr. Kaough indicated that the facility is in the process of applying for a modification to Cruzan's operating permit to go from a major air emissions source to a synthetic minor source. Mr. Kaough also indicated that the removal of the EC100 open air evaporator to a closed plate heat exchanger system for cooling the vinasse (residual solids from the fermentation) have brought Cruzan's VOC emissions below the 100 tons per year major source thresholds. The ethanol rich condensate from the new closed heat exchanger is pump back to the fermentation process. The permit modification request has been drafted and Cruzan stated they planned to send the permit modification to DPNR for review/approval the following week.

Mr. Kaough stated that the construction of the vinasse recovery process is the reason that they trigger the major source threshold for VOC emissions in the past. The original design included an open-air evaporator which resulted in increased emissions of ethanol to the atmosphere. The permit to construct the vinasse recovery process was approved by the DPNR in 2010. Since 2010, Cruzan has also requested the following changes to their permit:

2014 – Permit to construct a new generator
2019 – Title V permit application for including Vinasse Process
2022 – Emergency backup generator replacement
2022 – Planned synthetic minor permit application for replacing their open-air evaporator with closed heat exchanger

In May 2022, Cruzan notified DPNR in writing that they will be removing the open-air evaporator. Andrew Jackson was also notified by phone about this process change and was invited to the facility to see the upgrade. Mr. Jackson confirmed during EPA's inspection that he did visit the facility in May for this purpose. EPA inspectors asked if the condensate is sampled on a routine basis to which Mr. Kaough said it was. EPA inspectors asked for copies of the condensate reports for the past two years.

Mr. Kaough indicated that the rum making process continues until the equipment needs to be cleaned. There are approximately three shutdowns per year for cleaning. The process starts with molasses being shipped by barges to the facility. The molasses does not need to be heated because of the local climate. The waste molasses is sold as animal feed.

Cruzan operates four boilers that are permitted for ultra-low sulfur diesel fuel, LPG, or LNG. Boiler 1 is a 600 HP Johnston-made boiler rated at 23.4 MMBtu/hr for diesel or 25.3 MMBtu/hr for gaseous fuel. Boiler 2 is a 400 HP Superior-made boiler that is rated at 16.7 MMBtu/hr for diesel or 16.8 MMBtu/hr for gaseous fuel. Boiler 3 is a 450 HP Superior-made boiler that is rated at 17.92 MMBtu/hr for diesel or 21.0 MMBtu/hr for gaseous fuel. Boiler 4 (Distillery Boiler) is a 600 HP Cleaver Brooks-made boiler that is rated at 22.7 MMBtu/hr for diesel or 23.2 MMBtu/hr for gaseous fuel.

Cruzan is permitted to operate three power generators but at the time of the inspection, one of them had been removed from service permanently. The two remaining power generators in service are:

Power Generator 1 which is a Caterpillar Model CG170K permitted for LNG or LPG fuels. This is a gas-fired internal combustion engine that is rated as 1,565 kW. There is no control attached to this.

Power Generator 2 which is a Caterpillar Model C32 permitted for diesel and LPG fuels. This is a diesel-fired internal combustion engine with a Selective Catalytic Reduction (SCR) control. This generator is able to use 30-50% petroleum gas-diesel mixture and is rated as 1,352 bhp.

Stack tests were conducted for the two generators in 2017 and 2021. EPA inspectors requested a copy of the stack tests reports.

Cruzan also owns two emergency generators and two fire pumps that operate on diesel fuel. These emergency power generators and fire pumps are as follows:

Emergency Power Generator 1 (Caterpillar CAT3516C)
Emergency Power Generator 2 (Caterpillar CAT3412)
Fire pump 1 (Cummins CFP9E-F10)
Fire pump 2 (Cummins NT-280-IF)

Cruzan own a 150,000-gallon diesel storage tank that supplies fuel to a 13,220-gallon diesel day tank. There are two LPG tanks onsite. At the time of the inspection, Cruzan representatives were not sure of the size of these tanks and stated they will get back to EPA Inspectors with that information.

Plant Tour

The plant tour started at approximately 11:30 AM. The EPA inspectors and the DPNR inspector were accompanied by Mr. Kaough and Ms. Maldonado on the tour. EPA inspectors stated that a FLIR camera would be used during tour. Cruzan staff stated that this would be okay.

Inspectors first walked through the fermentation part of facility. A urea tank was observed. Mr. Kaough explained that the urea is used to cool the fermentation process. EPA inspectors asked how much urea was used on an annual basis. Mr. Kaough indicated that he would get back to us with this information.

At approximately 11:50 AM, the group toured the fuel vaporizer area. The FLIR camera was used to assess the potential emissions/leaks in this area. No emissions/leaks were noted using the FLIR camera. Inspectors was then inspected the emergency generator (CAT 3412). Inspectors recorded the total usage time of the generator at 3,306 hours. EPA inspectors asked for maintenance and usage logs for the emergency engine which the company representatives agreed to provide.

At approximately 12:00 PM, the group arrived at the distillatory area. Inspectors walked through the control room and inspected the distillation and condensation columns. The FLIR camera was used to assess potential emission from these structures. EPA inspectors observed, through the FLIR, what appeared to be a large amount of VOC emissions from the condenser column. A video of these emissions was recorded.

At approximately 12:30 PM, the inspectors toured the boiler area. EPA inspectors inspected the tw o primary boilers, CG170 and C32 which were in operation. The C125 boiler was not operating at the time of inspection. Mr. K Kaough remined EPA inspectors that boiler C125 is no longer operational. EPA inspectors noted that the fuel line to boiler C125 has not been disconnected. Inspectors was next escorted to the emergency generator (CAT 3516). Inspectors recorded the total usage time of this generator was 5,375 hours. EPA inspectors asked for the maintenance and usage logs for this emergency engine.

At approximately 12:45 PM, the group arrived at the Platted Heat Exchanger area, which replaced the EC100 Evaporator unit. The FLIR camera was used to assess potential emissions/leaks in this area. No emissions/leaks were noted using the FLIR camera.

The facility concluded the plant tour at approximately 1:00 PM and the group returned to the conference room for a closing meeting/conference.

Closing Conference

EPA inspectors provided and discussed a summary of the team's observations during the plant tour. EPA inspectors also requested the following documents:

1. A copy of the latest permit modification application that Cruzan was planning to submit to DPNR;
2. A copy of the permit to construct related to the removal of EC100;
3. Daily sampling results from the condensate tank;
4. 2017 and 2021 stack tests reports for Engines C32 and C170 (total of 4 reports);
5. Copies of various engines maintenance logs and operating time records for past 2 years;
6. Copies of annual spreadsheet emission calculations for the past 2 years;
7. Copies of emergency generators maintenance logs and operation time records for past 2 years;
8. Copies of Fuel SO2 Concentration Logs

EPA inspectors stated they may request additional information and/or documents if needed and thanked the Cruzan representatives for their assistance on the inspection. EPA inspectors left the facility at 1:30 PM.

Lead Inspector's Name: Victor Tu

11/18/2022

X Victor Tu

Lead Inspector
Signed by: VICTOR TU

Assisting Inspector's Name: Ralph Lonergan

11/18/2022

X Victor Tu for Lonergan

Assisting Inspector
Signed by: VICTOR TU

Supervisor's Name: Harish Patel

11/18/2022

X Joseph Cardile for Patel

Supervisor
Signed by: JOSEPH CARDILE